Translation

PCT Application
PCT/JP2003/007538

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference FP20030507	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/JP2003/007538	International filing date (*day/month/year*) 13 June 2003 (13.06.2003)	Priority date (*day/month/year*) 14 June 2002 (14.06.2002)
International Patent Classification (IPC) or national classification and IPC B01D 53/94		
Applicant THE CHUGOKU ELECTRIC POWER CO.,INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
13 June 2003 (13.06.2003)	08 December 2003 (08.12.2003)
Name and mailing address of the IPEA/JP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/JP2003/007538

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-16, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:

pages 2-4, 6-12, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages 1, 5, filed with the letter of 07 November 2003 (07.11.2003)

☒ the drawings:

pages 1, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-12	YES
	Claims		NO
Inventive step (IS)	Claims	3, 7	YES
	Claims	1, 2, 4-6, 8-12	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

2. Citations and explanations

Document 1: JP 7-47108 B2 (Kyushu Electric Power Co., Inc.) May 24, 1995
Document 2: JP 10-109018 A (Babcock-Hitachi Kabushiki Kaisha) April 28, 1998

Based on the descriptions in documents 1 and 2 cited in the international search report, the inventions of claims 1, 2, 4-6 and 8-12 lack an inventive step.

Document 1 (claim 1, Examples) describes a denitration catalyst control apparatus and denitration catalyst control method in which the concentrations of NOx and NH_3 are measured in various layers of a multilayer catalyst by a measurement device, and the denitration rate of the various catalyst layers is measured based on the NOx concentration. Document 1 also states that in this control method, a performance restoration treatment is performed by replacing the denitration catalyst.

Document 2 (claims 2 and 7; Par. No. 0007) states that in evaluating the degree of degradation of a denitration catalyst by measuring the denitration rate, a more accurate denitration performance can be grasped by taking into consideration the inlet molar ratios, of NOx and NH_3 in addition to the data that is conventionally used such as the outlet NOx concentration. This examination finds that persons skilled in the art can easily adopt the means of measurement described in document 2 that takes into consideration the inlet molar ratios of NOx and NH_3 as a means for measuring the denitration rate more accurately in the invention described in document 1.

In addition, although the inlet NH_3 concentration that is predicted from the amount of injected NH_3 and the outlet NH_3 concentration is used instead of the actually measured inlet NH_3 concentration when determining the inlet molar ratio in document 2, persons skilled in the art can easily use the measured value in place of the predicted value as needed. Furthermore, persons skilled in the art can easily evaluate catalyst performance of multiple denitration apparatuses by a single denitration catalyst control apparatus.

Moreover, because the NH_3 concentration value is used in determining the inlet molar ratio, when the denitration rate is measured by taking the inlet molar ratio into consideration, naturally the denitration rate will be measured based on the NH_3 concentration.

The inventions of claims 3 and 7 are novel and involve an inventive step with respect to documents 1 and 2 cited in the international search report.

Documents 1 and 2 do not describe measuring the denitration rate using the formula specified in claims 3 and 7 to control the denitration catalyst, and persons skilled in the art cannot easily conceive of this matter.